OPTAROS + MASSACHUSETTS CONVENTION CENTER AUTHORITY

CREATE A STREAMLINED EVENT MANAGEMENT SYSTEM, BOOST REVENUE USING JBOSS AND OPEN SOURCE SOLUTIONS

FAST FACTS

Companies	Massachusetts Convention Center Authority (MCCA) Optaros
2009 JBoss Innovation Award Winner	JBoss Extensive Ecosystem
Geography	Boston
Business challenge	Manual processes and siloed systems resulted in inefficient workflows that caused customer service to suffer.
Software	JBoss Enterprise Application Platform, JBoss Enterprise SOA, JBoss Messaging, JBoss ESB, JBoss jBPM, J2EE™, Google Web Toolkit™, Apache,
Hardware	Intel Xeon™ -based x86 servers
Migration path	From a Microsoft™ Windows™ -based client-server application to service oriented architecture (SOA) J2EE application based upon the JBoss Enterprise Application Platform
Benefits	More efficient and timely access to data and an automated streamlined workflow that improved worker productivity and customer service levels and increased revenues. Approximately 90 percent of the MCCA's day-to-day operations are run using open source technologies.

BACKGROUND

The Massachusetts Convention Center Authority (MCCA) owns and oversees the operation of four major facilities, including the Boston Convention & Exhibition Center (BCEC). The MCCA's mission is to generate local economic activity by attracting conventions, tradeshows, and other events to its world-class facilities. The MCCA has generated $2.3 billion in economic impact over the past five years in the greater Boston area and is the eighth busiest convention center in North America.

Optaros is an open source consulting firm that specializes in the development of custom applications for clients through the Assembled Web. Optaros and MCCA staff worked together to rebuild the MCCA's event management system. The product, known as ShowBiz, helps streamline the detailed process of setting up large-scale events, and is now completely run on an open source stack that was designed and assembled by Optaros. Approximately 90 percent of the MCCA's day-to-day operations now run on open source solutions from Red Hat and JBoss.

"We're finding more enterprises choosing open source—not just because of its low cost and ability to scale, but also because of the flexibility it gives them to choose components that plug and play into their systems as their needs change. And JBoss is clearly the industry middleware standard for these increasingly strategic open source projects."

–Errol Apostolopoulos,
Management Consultant at Optaros, which designed and built MCCA's JBoss-based applications

BUSINESS CHALLENGE

The MCCA's business model is based on the premise that it has an "inventory" of convention center space to sell – space that is used to host trade shows, association meetings, and other events. And despite being owned by the state government, the MCCA prides itself on operating like a for-profit business for the economic benefit of the City of Boston and Commonwealth of Massachusetts. In particular, the MCCA team strongly believes in providing an exceptional client experience, which means being able to rapidly configure its facilities and tailor its services to deliver whatever a particular customer wants.

To do this, the MCAA required an IT structure that was fluid, flexible, and scalable. But the application the MCCA was using to manage the sale of space was antiquated and difficult to use. The biggest challenge was that personnel did not have ready access to data. Without this data, users couldn't make the kind of smart, real-time decisions needed to optimize service delivery and revenues during each stage of an event's lifecycle. Important business decisions were being affected by the antiquated software, often relying on intuition and guesswork rather than facts. Everyone in the organization was affected by the system's faults – from the executive suite down to contract electricians.

For example, because the financial database had been separated from the event management system in 2006, all accounts receivable and event creation information had to be manually entered in both applications, creating duplicate work for all involved as well as introducing errors into the databases. Additionally, managing service delivery to the large number of exhibitors was primarily a paper-based manual process that didn't support online ordering and payment. And then there was scalability. The MCCA realized that its systems were a serious impediment to its ability to grow as planned.

Because of the MCCA's unique, multi-facility business structure and complex business processes, a commercial off-the-shelf application wouldn't do. MCCA senior executives knew they needed a new, custom-built solution that was designed to support the specific needs of their business.

Moreover, such a solution needed to provide MCCA employees with more efficient, timely access to data. It had to automate workflows. It had to minimize manual processes and eliminate redundant data entry and utilize technologies that would provide flexibility and scalability for the future needs of the business. Finally, it had to deliver an easy-to-use and elegant user experience that the MCCA could eventually extend access to the application to clients and customers.

SOLUTION

After performing a thorough analysis of its needs, the MCAA brought in Optaros, a Boston-based professional services firm that designs, assembles, supports, and monitors custom Web applications using open source software. "Steve Snyder, the CIO and CTO of the MCCA liked the freedom and the choice that open source offered," said Errol Apostolopoulos, a management consultant at Optaros, who managed the project. "The fact that we could build him an application based on industry standards was very attractive to him. There were the lower acquisition costs, of course. But then there was also the fact that all the open source technologies, tools, and platforms integrated together so well."

The MCCA was looking for a scalable solution that could grow with the company — exponentially in regard to data structures. They determined that a SaaS, software as a service, type architectural model, allowing for plug-and-play, iterative updates would offer technology that could evolve and grow along with the organization.

From the beginning, it was clear that Red Hat's JBoss Enterprise Application Platform was going to play a large role in the solution. "Part of our process is to go out and comb the open source community to find the best technologies we can leverage to build our solutions," said Apostolopoulos. "JBoss was the absolute best choice for the MCCA."

The MCCA solution contained three pairs of JBoss instances. The first pair was used for the online customer-facing site.

By hosting JBoss Enterprise Application Platform in a clustered environment, the MCCA allows exhibitors to purchase services and materials online. Previously, they had to fax in their orders, which then had to be entered into the old event management system manually.

The second JBoss pair also involved using JBoss in a clustered environment, and was used for the MCCA's internal event management site. This new event management application allowed MCCA personnel to manage all aspects of the event lifecycle – from sales, to event and space setup and configuration, to exhibitor services, to all financial aspects of the event. This application uses JBoss jBPM as the workflow engine for the initiation, review, and approval of space booking throughout the sales cycle, from pre-sales through confirmation upon receipt of the signed contract.

The last JBoss pair hosted the Mule Enterprise Service Bus (ESB). This ran all services for executing transactions such as auditing, issuing notifications, and integrating with external organizations' systems such as PayPal for credit card processing.

Optaros selected Google Web Toolkit (GWT) as the front-end of the system. Business services were developed using Hibernate frameworks to handle queries and transactions.

All JBoss applications and ESB servers were configured to run on Intel Xeon-based hardware under Windows Server 2003. The applications run on a cluster of SQL Server database servers configured for replication and failover. Today, the MCCA employs 10 production servers; four servers for quality assurance (QA) and testing; and two for developing enhancements to the system to run the application

BENEFITS

MCCA personnel now have ready access to real-time data, as opposed to running reports and requesting information that was often hidden within the old system. Streamlined processes enabled by the new architecture have allowed staff to redeploy time previously spent on unnecessary manual and paper processes to focus on customer service. Overall, employees are much more efficient, and the corporate culture is much more customer-centric than under the previous system.

This tiered architecture is not only secure, but is also scalable, reliable, and available. For instance, the deployment manager can scale the three clusters independently based on their respective usage in terms of number of concurrent users, transactions volume, and more. From a security perspective, the ESB servers act as reverse proxies to a back-office financial management system and PayPal's credit card processing network.

The fact that Optaros designed the applications using service oriented architecture (SOA)-based plug-in/plug-out framework means that the MCCA's own IT team can integrate other external services into it as needed going forward. This gives the MCCA the flexibility and scalability to meet its growth objectives while keeping the main application stable.

From a financial perspective, the new applications have been a tremendous success. Employees are no longer wasting time manually inputting duplicate content into multiple systems, but can focus on higher-level tasks. As a direct result of this, the MCAA has been able to collect more than $500,000 in outstanding accounts receivables over the past six months.

And the new applications have allowed the MCCA to deliver a premiere customer experience. Under the old systems, work orders were comprised of 50- to 100-page documents that included details such as the number and location of chairs, the timing of food service, electrical needs, and everything else that impacts the success of an event. Today, all data related to an event is searchable, and MCCA customers are now able to order and update space, tables, internet access, electrical outlets and other services online rather than using the outdated paper faxing process. MCCA personnel are then electronically notified when there are any changes to work orders that affect their roles in an event, and the event system can be trusted to contain the most recent information.

These conveniences are only the first step. The MCCA wants to extend accessibility and transparency to the applications even further. For example, the MCCA hopes to eventually give taxi drivers access to the system so they can see in real time the transportation needs of people attending an event.

Finally, credit card processing is now completed automatically and in real time, instead of manual batch processing at the end of each business day.

"The competence of Red Hat's consultants and support personnel clearly contributed to the application development team's overall success," said Apostolopoulos. "Their support enabled the project team to deploy systems more effectively with the assurance that additional assistance was only a phone call away. The Red Hat team went above and beyond our expectations."

Apostolopoulos said that he recommends JBoss to its customers whether they are building new applications from scratch or migrating existing applications from proprietary hardware and software to an open source platform.

"We're finding more enterprises choosing open source – not just because of its low cost and ability to scale, but also because of the flexibility it gives them to choose components that plug and play into their systems as their needs change," said Apostolopoulos. "And JBoss is clearly the industry middleware standard for these increasingly strategic open source projects."

"Our customers will soon have access to the same data the staff does, so people can order more services directly through the system," said Steve Snyder, chief information officer for the MCCA. "The shopping cart and credit card processing for basic client needs are only the first step in offering more accessibility and transparency for customers to directly access data. The MCCA has hopes of allowing more constituents to access pieces of the system. The technology and system that was built, the cooperation between the JBoss, Optaros, and MCCA teams, the full buy-in from MCCA executives to end-users, and everyone being involved in the whole process truly made this deployment a resounding success."

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